CLAIMS:

1. A deposition system for oblique deposition comprising:

a source of vaporized species;

a substrate contacted by vaporized species forming a tilted thin film; and

a collimator having an array of holes oriented at approximately an oblique angle θ, the collimator placed between the source and the substrate to limit the passage to vaporized species traveling at approximately an oblique angle θ.

2. The deposition system of claim 1 wherein the oblique angle θ is greater than 35° and less than 90°.

3. The deposition system of claim 1 wherein the oblique angle θ is greater than 55° and less than 75°.

4. The deposition system of claim 1 wherein the holes are arranged in a radial pattern.

5. The deposition system of claim 1 wherein the holes are arranged so that the vaporized species passing through the collimator subsequently contact the substrate to form a radial pattern in the tilted thin film.

6. The deposition system of claim 1 wherein the holes are arranged in a circumferential pattern.

7. The deposition system of claim 1 wherein the holes are arranged so that the vaporized species passing through the collimator subsequently contact the substrate to form a circumferential pattern in the tilted thin film.

8. The deposition system of claim 1 wherein the holes are arranged so that the vaporized species passing through the collimator subsequently contact the substrate to form a tilted thin film with azimuthal symmetry.

9. A method for collimated oblique deposition onto a substrate, the method comprising:

placing a collimator between a source of a material and the substrate, wherein the collimator has a surface, and the collimator has openings tilted at an angle relative to a surface normal;

applying energy such that vaporized species leave the source and travel through the openings; and

depositing the vaporized species on the substrate resulting in a tilted thin film.

10. The method of claim 9 additionally comprising:

applying differential pumping such that a first chamber is subjected to a first pressure and a second chamber is subjected to a second pressure where the first pressure is less than the second pressure.

11. The method of claim 9 wherein the angle is greater than approximately 55° and less than approximately 75°.

12. The method of claim 9 wherein the openings are arranged in a radial pattern.

13. The method of claim 9 wherein the vaporized species are deposited on the substrate in a radial pattern.

14. The method of claim 9 wherein the openings are arranged in a circumferential pattern.

15. The method of claim 9 wherein the vaporized species are deposited on the substrate in a circumferential pattern.

16. A method of forming a magnetic storage media on a substrate, the magnetic storage media comprising at least one thin film tilted at an angle relative to a surface normal and having azimuthal symmetry, the method comprising:

depositing one or more materials through a collimator onto a substrate, wherein the collimator has openings tilted at an angle greater than 45° and less than 90° relative to a surface normal; and

rotating the substrate during deposition.

17. The method of claim 16, wherein the materials are from a source, the method additionally comprising:

applying a first vacuum between the collimator and substrate;

applying a second vacuum between the collimator and the source; and

applying differential pumping such that the substrate is subjected to a first pressure and the source is subjected to a second pressure where the first pressure is less than the second pressure.

18. The method of claim 16 wherein the openings are distributed across the collimator for deposition of the materials at a substantially uniform thickness.

19. A collimator for oblique deposition of a deposition beam resulting in a tilted thin film with azimuthal symmetry, the collimator comprising:

a block for intercepting a portion of the deposition beam, the block having a surface and a center; and

a plurality of openings in the block for passage of a portion of the deposition beam, the openings being tilted at an angle relative to an axis drawn normal to the block.

20. The collimator of claim 1 wherein the angle is greater than 35° and less than 90°.

21. The collimator of claim 19 wherein the angle is greater than 55° and less than 75°.

22. The collimator of claim 19 wherein the openings are arranged in a radial pattern.

23. The collimator of claim 19 wherein the opening are arranged in a circumferential pattern.